

**An Efficient Method for Copying and Creating Block-level**

**Incremental Backups of Large Files and Sparse Files**

**Abstract of the Disclosure**

5 Data structures are provided for file systems to facilitate backup processes that are especially useful for large and/or sparse data files. In one aspect of the invention, these data structures include time stamp information that is accessible for use by a system user at the application program level. These data structures also include indications of current validity that reduce the need to perform I/O operations which are naturally very resource intensive for large  
10 files. The ability to incorporate efficiencies accorded to files having blocks designated as being sparse is also provided. The incorporation of these data structures in the file system itself permits the backup process to be not only incremental in nature but also to be directed at the file level as opposed to, say, the disk level.